

## INFORMATION SHEET

### ORDER NO.

BIOSOLIDS RECYCLING, INC., JOSEPH AND CONNIE JESS, AND PAUL AND SALLY MARCIEL  
JESS RANCH AND MARCIEL RANCH BIOSOLIDS APPLICATION SITES  
ALAMEDA COUNTY

Jess Ranch (450 acres) and Marciel Ranch (470 acres) have been used as biosolids land application sites intermittently since 1992, and are currently regulated under WDRs Order No. 94-363. Each field receives one application of biosolids per year in accordance with the agronomic needs of the crop to be grown. Supplemental fertilizers are not used. Following biosolids application (typically April through November), each field is cropped, and the fields are not irrigated. Cattle are grazed at the sites to remove the crop.

Based on the calculated cumulative metals loading after seven years of biosolids application at Jess Ranch (1992 through 1999), it appears that the lead and copper content of biosolids will determine the number of applications remaining before the cumulative loading limits are reached, and that the cumulative loading limit for lead may be reached within 22 years if biosolids are applied each year and metals concentrations are the same as in previous years.

Order No. 94-363, originally issued to Future-Tech Environmental Services and the land owners, prohibited discharge of storm water and irrigation runoff from the fields for six months following application of biosolids. That Order also allowed biosolids to be stored on-site for up to 45 consecutive days, but required vadose zone monitoring beneath the biosolids storage facility.

During a routine facility inspection on 26 July 2000, staff observed that the existing runoff control and storm water detention basins were not designed to capture runoff from all of the permitted land application fields and did not appear large enough to contain all storm water for the required detention period. . Additionally, there was no vadose zone monitoring system in operation at the biosolids storage area as required by the WDRs. Staff subsequently issued a Notice of Violation to the Dischargers requiring that they either comply with the WDRs or apply for revised WDRs, justifying the proposed changes. The operator agreed to cease land application, but requested that the WDRs not be rescinded.

The Dischargers requested that Order No. 94-363 be revised to require only 30 days of storm water detention following biosolids application, and to allow biosolids applications to certain drainage areas during the rainy season (November through March). The Dischargers proposed to continue to comply with:

1. The slope limitations of Order No. 94-363, which allow application to slopes of up to 28 degrees (53 percent, or greater than 2H:1V); and
2. The setback requirements of Order No 94-363, which include a 100-foot setback from surface water drainages.

The sites exhibit rolling hilly terrain with drainage to Mountain House Creek in Altamont Pass. Slopes range from nine to fifteen percent along hilltops and ridgelines, and are greater than 75 percent (1.3H:1V) on the hillsides. The sites are subject to moderate, sustained winds.

The proposed discharge does not qualify for coverage under State Water Resources Control Board (State Board) Order No. 2004-0012-DWQ, the General Waste Discharge Requirements for the Discharge of Biosolids to Land because the Dischargers wish to apply biosolids to slopes greater than 25 percent. However, many of the requirements of the General Order are appropriate for these sites. Therefore, the

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Prohibitions and Discharge Specifications of this Order are similar to those contained in the State Board's General Order. Staff's derivation of certain Discharge Specifications and Provisions contained in this Order is discussed below

***Prohibition A.1 and Provision G.1.a***

Based on the Report of Waste Discharge, the Dischargers have not demonstrated that the discharge as proposed complies with the Basin Plan as it pertains to protecting surface water quality that may be degraded by storm water discharges from the site. Therefore, Prohibition A.1 prohibits any application of biosolids unless and until the Executive Officer approves an *Erosion and Runoff Control Compliance Report* that demonstrates that all land application areas have fully functional runoff control systems that comply with the requirements of this Order. The specific reasons for this requirement are discussed further below.

The August 2005 RWD defined several discrete drainage areas for the ranch sites. Each ranch site has several storm water detention basins to control discharge of storm water to Mountain House Creek. The Dischargers acknowledge that six of the drainage areas do not have sufficient storm water detention capacity to provide thirty days of retention during a normal precipitation year (based on the peak month precipitation total of 2.40 inches). Biosolids Recycling, Inc. states that the runoff calculations are conservative and that the detention ponds have never overflowed. However, the RWD did not:

- a. Provide a map showing the locations of the detention ponds at Marciel Ranch and portions of Jess Ranch; or
- b. Document the drawings, methods, and calculations used to determine the capacity of the detention ponds

Therefore, it is appropriate to require that the Dischargers provide complete information to demonstrate storm water detention facilities sufficient to ensure compliance with this Order prior to any further biosolids application, as required by Prohibition A.1.

Additionally, runoff control berms are needed to direct runoff from the application areas to the detention ponds and to prevent runoff from entering the three ephemeral streams that transect the sites. The RWD proposed to reconstruct the berms and detention ponds as needed prior to 15 October each year. Based on staff's December 2005 site inspection, no such berms were present.

Provision G.1.a requires that the Dischargers submit an *Erosion and Runoff Control Compliance Report* that demonstrates that all land application areas have fully functional runoff control systems at least 30 days prior to any planned biosolids application. The report must provide the following:

- a. Complete topographic mapping of all drainage areas, drainage courses, surface waters, storm water detention ponds, areas where slopes exceed 35 percent, and runoff control berms present at the sites.
- b. Scaled drawings of each runoff detention pond and engineering calculations demonstrating the storage capacity of each pond at two feet of freeboard.
- c. Runoff calculations that demonstrate sufficient runoff detention capacity to ensure compliance with the requirements of this Order.

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- d. If approval of application to slopes greater than 35 percent is requested, a supplemental erosion control plan that includes a scaled topographic map that documents areas where slopes exceed 35 percent and specifies the maximum practical slope for contour tilling and crop planting equipment operation under both wet and dry soil conditions, as well as supplemental erosion control measures as needed.

If desired, the report can be submitted in discrete phases, with each phase consisting of one or more of the drainage areas where the necessary improvements have been completed.

***Prohibition A.5 and General Discharge Specifications B.3 through B.6***

The Dischargers monitored storm water quality during years when biosolids were applied. Between 1992 and 1998, a total of sixteen storm water samples were analyzed: five samples from off-site runoff (background) and eleven samples from storm water detention ponds.

The storm water monitoring data indicate that storm water originating off-site is typically significantly more saline than on-site runoff contained in the detention ponds. However, the on-site runoff typically contained concentrations of nitrate and metals significantly greater than the off-site samples, which indicates that storm water runoff from the sites contains waste constituents that may pose a threat to surface water quality.

It is possible that dilution with storm water from upgradient sources will be sufficient to prevent degradation of surface water quality. It is appropriate to reduce the required storm water detention period to 30 days as requested, as long as the Dischargers demonstrate through surface water monitoring that surface water quality will not be degraded. It is also appropriate to require that the Dischargers expand the storm water detention ponds as needed to provide capacity for 30 days of runoff as defined by General Discharge Specification B.3 (i.e., 2.40 inches of precipitation). Accordingly, Prohibition A.5 prohibits land application of biosolids to any area without adequate runoff control and/or storm water detention capacity.

In requiring that the Dischargers provide retention systems with capacity to store 30 days of runoff, it is staff's intention to ensure that the first flush of storm water from the sites will be captured and land applied, and not released to surface water. Simply retaining storm water for 30 days after biosolids application to land will not reduce the concentrations of the metals and nitrate that pose a threat to surface water quality. Based on historical monitoring data for impounded runoff, concentrations of these waste constituents were high relative to background runoff after several precipitation events. Therefore, General Discharge Specification B.3 of the proposed Order defines the design basis for all retention structures as the runoff total for the peak precipitation month of the average precipitation year plus two feet of freeboard (i.e., runoff generated by 2.40 inches of precipitation plus two feet of freeboard).

General Discharge Specification B.4 requires that all storm water detention ponds be empty by 1 October each year. After that date, storm water runoff that accumulates in the ponds must be removed as necessary until the cumulative precipitation to date has equaled or exceeded 2.40 inches. The retained storm water must be land applied within the designated land application areas and not be allowed to enter surface water drainage courses.

Discharge Specification B.5 allows the discharge of storm water runoff to surface water drainage courses

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only for runoff generated after the cumulative total precipitation since 1 October equals or exceeds 2.40 inches. The Dischargers may wish to use temporary (seasonal) berms to direct or contain storm water runoff as required. It is important that such berms be completely intact to capture the first runoff events of each rainy season. Accordingly, Discharge Specification B.6 requires that any such berms be reconstructed by 30 June each year.

***Prohibitions A.3 and A.4, and Land Application Area Specification E.1***

The Dischargers' Erosion Control Plan states that runoff from the sites and the potential for erosion from bare soil is moderate. The plan proposed to use contour tilling to control erosion, stating that it is effective on slopes of up to 35 percent, but it did not address erosion control for steeper slopes. A winter crop (typically planted in October) would provide further erosion protection, but the RWD did not demonstrate that cropping would be sufficient to prevent erosion on slopes steeper than 35 percent. Therefore, Prohibition A.3 prohibits land application of biosolids to areas where the slope exceeds 35 percent unless expressly approved in writing by the Executive Officer. Because of the increased erosion risk associated with late tilling and seeding of winter application areas, Prohibition A.4 allows winter application of biosolids only to areas where slopes are less vulnerable to erosion (slopes of 25 percent or less).

The operator has stated that certain slopes at the sites are too steep to allow equipment access for land application, tilling, and cropping, but did not define the maximum practical slope for such activities. Although evidence of erosion problems associated with cropping practices has not been observed at the sites, it is unclear whether biosolids can be applied and incorporated on slopes greater than 35 percent without causing erosion. Therefore, Application Area Specification E.1 allows biosolids application to slopes greater than 10 percent only if the soil depth is sufficient to support the crop; the slope will allow safe operation of spreading and tilling equipment; and the slope can be tilled, planted, and grazed without causing or exacerbating soil erosion. Provision G.1.a requires that the Dischargers define those areas where site conditions effectively prohibit contour tilling or other effective erosion control. The Executive Officer can approve application to slopes greater than 35 percent if the report demonstrates that erosion can be adequately controlled.

***Land Application Area Specification E.4***

Because biosolids cannot be applied and incorporated after a crop has been planted, areas that receive winter applications as proposed could not be planted until sometime during the rainy season. However, site access for tilling and planting may be prevented by saturated soil. Areas that cannot be tilled and cropped will be vulnerable to erosion. Accordingly, Land Application Area Specification E.4 requires that each field receiving biosolids be planted with a crop such that the crop can reasonably be expected to germinate and grow within eight months of biosolids application.

***Provisions G.1.b through G.1.f and Groundwater Monitoring Requirements of the Monitoring and Reporting Program***

The Dischargers have not completed a site-specific subsurface investigation to assess the occurrence and chemical quality of groundwater beneath the facility site. However, based on recent groundwater monitoring data for a gasoline service station formerly located at the northeastern corner of Jess Ranch, shallow groundwater may be present approximately 20 to 30 feet below the ground surface at lower portions of the ranch sites.

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Historical groundwater monitoring data for wells upgradient of the former fuel tanks indicate that local groundwater quality is moderately to extremely saline with nitrate concentrations that frequently exceed the applicable water quality limit of 45 mg/L. Presumably, the nitrate results from ongoing use of the adjacent land as cattle pasture. Due to the possibility of shallow groundwater present at the sites and evidence of existing nitrate impacts to groundwater quality, it is appropriate to require that the Dischargers evaluate the depth to groundwater near the down slope site boundary during late spring when the water table is expected to be at its highest point. If groundwater is found at less than 25 feet below ground surface, it is appropriate to require groundwater monitoring and definition of background groundwater quality to ensure compliance with the groundwater limitations of this Order.

Accordingly, Provisions G1.b through G.1.c require that the Discharger perform a limited investigation to determine if groundwater is present, or may be seasonally present, at a depth of less than 25 feet below the ground surface. If groundwater is present at that depth, Provisions G.1.d through G.1.f require that the Dischargers install monitoring wells and evaluate background groundwater quality. The Dischargers may elect to install wells in areas with the highest potential for impacts (i.e., areas where the water table is shallowest) or throughout the sites. The Monitoring and Reporting Program requires quarterly groundwater monitoring only if groundwater is present, or may be seasonally present, at a depth of less than 25 feet below the ground surface.

#### ***Surface Water Monitoring Requirements of the Monitoring and Reporting Program***

Historical monitoring data for impounded storm water runoff indicate that storm water runoff from the sites contains nitrate and metals at concentrations that may pose a threat to surface water quality. It is possible that dilution with storm water from upgradient sources will be sufficient to prevent degradation of surface water quality. It is appropriate to reduce the required storm water detention period to 30 days as requested, as long as the Dischargers demonstrate through surface water monitoring that surface water quality will not be degraded. The Monitoring and Reporting Program identifies four surface water monitoring locations (one location upgradient and downgradient for each of the ranch sites) and requires monthly surface water monitoring when water is present in the surface water channels during the rainy season. If the surface water monitoring reports show increases of biosolids waste constituents in the receiving water, it may be appropriate to reopen this Order and require more stringent runoff control and retention times, or to require that the Dischargers obtain an NPDES permit for storm water discharges from the sites.

#### ***Monitoring Reports***

Historically, individual WDRs for biosolids land application sites required that dischargers obtain approval prior to each application of biosolids by submitting a Pre-Application Report. A Post-Application Report was also required following application. The State Board's General Order contains a similar requirement. WDRs for other types of waste typically allow a discharger to discharge and require that the discharger comply with requirements and specifications to protect water quality. The discharger submits post-discharge monitoring reports to allow staff to verify compliance with the WDRs.

The pre-application report process for biosolids requires that staff complete the report reviews quickly so that land application could proceed, and staff has had to review multiple pre-application reports for each permitted site each year. Staff's review of numerous such reports indicates that biosolids typically have complied with the waste constituent restrictions of the WDRs. Therefore, there is not a compelling reason

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to require that the Dischargers obtain approval before each and every application. Accordingly, the Monitoring and Reporting Program requires that the Discharger submit monthly monitoring reports whose content is equivalent to the contents of both a pre- and post-application report.

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